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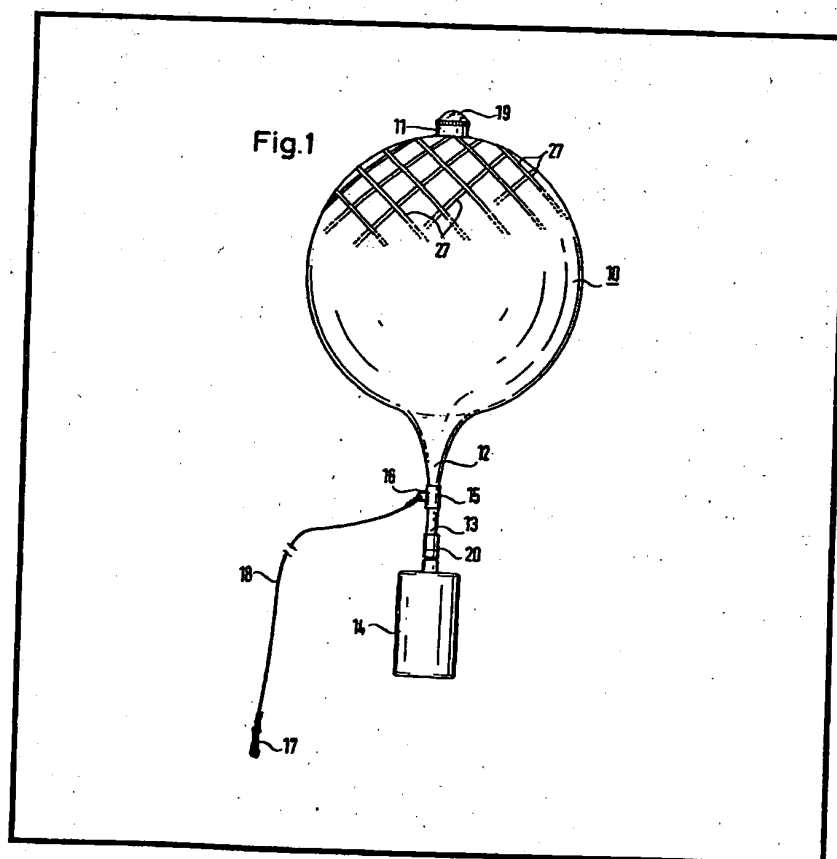
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(54) A position indicating marker device

(57) A marker device for position indication comprises an inflatable balloon (10) connected via a holding rope (18) to a safety holder (17), e.g. a spring hook, and which is releasably attached to an anchorage in order to indicate the position of persons in distress. A gas cartridge (14), which can be directly screwed into the balloon (10), is releasably detachable and includes a trigger which is operated manually or by entry of water. The complete arrangement takes up very little space and can be stored in a container which a person can carry on his body and which can be used repeatedly after the gas cartridge (14) has been exchanged.



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Fig. 1

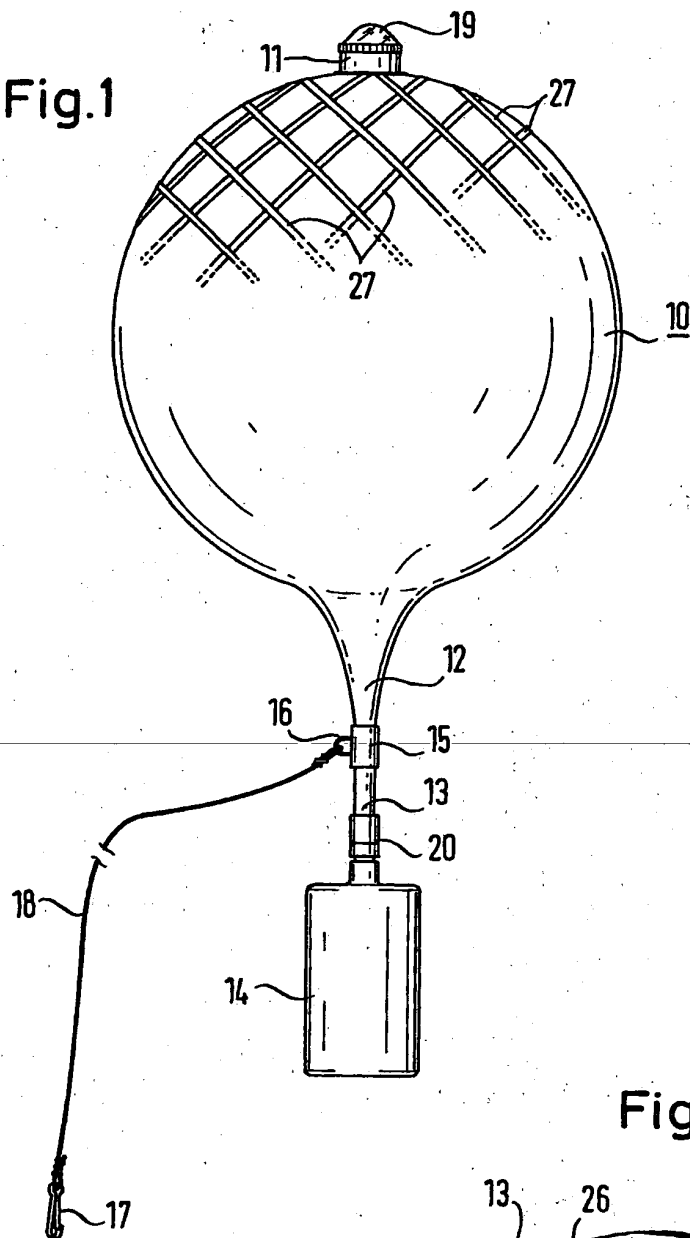
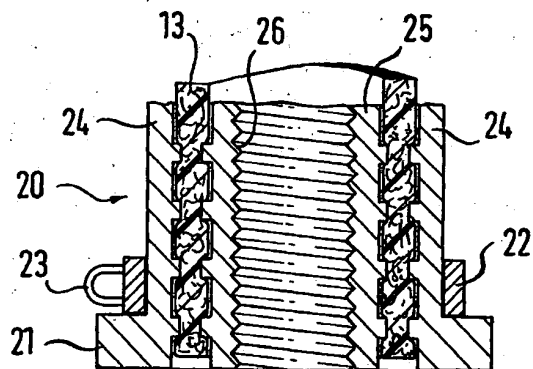


Fig. 2



SPECIFICATION

A position indicating marker device

- 5 This invention relates to a position indicating marker device having a securing means, which holds the device in position, and an indicating means for indicating the position of the marker and including a connecting member for connecting both means.
- 10 Marker devices for position indication are of particular importance in navigation at sea where all kinds of buoys are used for marking navigable waterways and the like. In some cases it is necessary, however, to have such markers on the high seas to mark position, if for instance someone goes overboard or some other emergency situation arises. In such cases buoys can also be used which are
- 15 provided with a rod and flag; however, experience has shown that the use of such buoys is very rarely sufficient in order to relocate the appropriate position quickly and reliably. Even in slightly rough seas, the problem arises that the buoys floating on the surface of the water roll over and disappear in troughs of the sea and can hardly be seen, whilst a rod arranged thereon hardly stands out against the back-ground.
- 20 This can easily lead to extremely difficult and dangerous situations for anybody who has gone overboard, in particular in rough seas and particularly if one is sailing with a yacht on the high seas and it is necessary to execute turning manoeuvres or even tack against the wind in order to return to the position, for in the meantime the situation may easily have changed considerably due to wind and current conditions.
- 25 Various means have already been used in attempts to remedy this difficulty, without having led to great success. In this respect, the fact must not be overlooked that such emergency situations at sea occur, in the majority of cases, quite unexpectedly and that a person who goes overboard has in most cases no means at hand to effectively attract attention. Even if he happened to have a device for producing smoke signals, for example, there is the danger that these smoke signals might be blown away by the wind, thus not having their intended effect.
- 30 The invention seeks to provide a position indicating marker device which is easy to manufacture and which greatly increases the likelihood of relocating the position marked therewith.
- 35 According to this invention there is provided a marker device for position indication comprising securing means for releasable attachment to an anchor, a float, a fixed anchor- or other suitable object whereby the device is held in position, means for indicating the position of the device comprising an inflatable balloon locatable optically, acoustically

or by radar beams, and inflating means adapted for releasable connection to said balloon, the arrangement including a connecting rope which connects said balloon to said securing means.

- 70 Although the marker in accordance with the invention is particularly suitable for emergency situations at sea, it is not confined to this application but can also be used advantageously for emergencies in the mountains, emergency situations for parachutists after descent or for sporting airplanes after a forced landing. The marker device can be carried by persons on their bodies without any problem when folded in a suitable container and can be operated as the need arises, so that it is also ready for use in sudden emergencies.

80 It is particularly advantageous if the securing means is a safety holder for the marker device consists in a spring hook or shackle. The marker device can thus be attached in a simple manner to a belt worn on the body or to an object to be marked, for instance to a float provided with ballast and drag anchor, to a rubber dinghy, to a raft or to a boat.

90 The balloon of the position indicating marker device preferably consists of a rubberized artificial-fibre cloth which has been dyed with a phosphorescent paint. The balloon is accordingly clearly visible even at a large distance and the marked position can be more positively relocated.

100 In a further embodiment of the invention the outside of the balloon is provided with metal strips which reflect radar beams. Such an embodiment advantageously permits relocation of the marked position, even in poor visibility, e.g. at night or in fog, by means of radar beams whereby a person carrying such a marker device can be rescued from an emergency situation.

105 In a further embodiment of the marker device the balloon is attached to the connecting rope by means of a basket-like shackling which consists of wires or ropes and on which the reflecting strips are arranged. In such an embodiment the secure attachment of the balloon to the connecting or holding rope is advantageously ensured and accordingly the balloon will not tear away from the connecting rope under windy conditions. In order to ensure that the metal strips which reflect radar beams are also effective in this embodiment, they are appropriately arranged on the shackling.

120 It is particularly advantageous if the upper side of the balloon is provided with a transmission means, which emits electromagnetic waves, for the purpose of transmitting optical, acoustic and/or radar signals, such transmission means being connected through an electric lead to a battery which may be operable by infiltrating water, if necessary. This embodiment provides that persons in emergency situations need not rely on other per-

sons becoming aware of the balloon, but instead they have a means at their disposal for drawing attention to themselves. This can be of vital importance, particularly under poor visibility conditions.

Finally, in a further embodiment of the marker device the inflation means for the balloon comprises a gas cartridge which can be screwed into a position of gaseous engagement therewith, being filled with a gas lighter than air and which includes a trigger releasable by infiltrating water and/or manually. In this manner, it is easy to exchange the gas cartridge containing the inflating gas so that the marker device itself can be used again. Mechanisms can be used as a suitable trigger which are automatically released, for instance by infiltrating water, while for safety's sake and dependent on the place of application a manually releasable trigger can also be provided.

By way of example only an embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 shows a schematic side elevation of the marker device and

Figure 2 shows an enlarged schematic sectional side elevation of one example of mounting support for the marker balloon.

Referring to the drawings, the marker device basically comprises three main parts, namely a balloon 10, an exchangeable inflating means 14, arranged on the neck 12 of the balloon 10, and a securing rope 18 provided with a safety holder 17.

The balloon 10 comprises a thin and sufficiently pressure-resistant, rubberized artificial-fibre cloth which has been dyed with a phosphorescent paint so that the balloon is clearly visible with the naked eye, even at a large distance. The balloon 10 can assume any desired shape, for instance spherical or pear-shaped.

Depending upon its use and intended purpose the diameter of the balloon 10, when inflated, and the inflating gas for the balloon 10 are selected so as to achieve the desired buoyancy and thus the necessary lifting capacity. If, by way of example, hydrogen or helium are used as inflating gas, a balloon with a diameter of 1 metre has a volume of approximately 500 litres and thus has a lifting capacity of approximately 500 grammes. Balloons of larger diameter can also be used, whereupon the lifting capacity of the balloon and its cross-sectional area are also increased, whereby the balloon is more clearly visible.

The securing rope 18, by means of which the balloon 10 is connected to the holder 17, appropriately comprises a thin, light, artificial-fibre rope which has only to be sufficiently strong for secure connection of the balloon 10 to the safety holder 17. The latter may, for instance, consist in a spring hook or shackle

so that the safety holder 17, can be releasably attached to a person or to an object. In this manner it is possible to attach the marker device for example to an anchor, a float, a stationary anchorage or to a life-jacket worn as a precautionary measure in rough seas where the danger of man-over-board situations exists.

Such an arrangement facilitates the use of the marker device together with various devices serving as an anchorage, for example with buoys, boats, rafts etc. floating in the water. On the other hand, it is also possible to use such a marker device on land, for example in the case of emergency situations in the mountains, in the case of emergency situations in the mountains, in the case of parachutists after descent or in the case of airplanes after a forced landing, so that a clearly visible optical signal can be given. The length of the securing rope 18 is selected in accordance with the particular purpose for which the device is intended, and the length may be approximately 10 metres.

As indicated in the drawing, the balloon 10 converges into a neck 12 and a mouthpiece 13 to which an inflation means is attachable. As shown in Fig. 2 the mouthpiece 13 is arranged in an elongate collar 20 having a profiled outer wall 24 and a profiled inner wall 25. The rubberized artificial-fibre cloth of the balloon mouth-piece 13 is clamped between both of these profiled outer and inner walls 24 and 25, the profiled walls being arranged opposite each other to ensure that the mouthpiece 13 does not slip out and is rigidly held in position. The inner wall 25 is provided with a thread 26 on its inner side, and a gas cartridge 14 can be screwed into this thread. A rubber gasket (not shown) can, for example, be provided at the lower edge of the collar 20 in order to provide a seal between the screwed-in gas cartridge 14 and the balloon 10.

The gas cartridge 14 is filled with a suitable gas which ensures the inflated balloon 10 is considerably lighter than air. As already mentioned, helium or hydrogen may, for example, be used. Mechanisms which provide automatic operation of the gas cartridge upon entry of water and which are already known, for example in life-jackets, may be used as a trigger for the gas cartridge 14. Mechanisms of this kind are known which employ tablets or rings which lose their firmness upon entry of water, and then release a spring-retained pin so that the gas can enter the balloon. A check valve (not shown) is appropriately integrated in the mouthpiece 13 of the balloon 10, and this valve not only prevents undesired escape of gas from the balloon but also facilitates opening of the mouthpiece 13 when the gas cartridge has been screwed out, if it is intended to empty the balloon 10 and to use it again.

Alternatively or additionally, the gas cartridge 14 may also be provided with a trigger which can be released manually to facilitate rapid inflation of the balloon 10 in any event, should the automatic trigger either fail or where no such trigger is provided. Such a manually operable trigger may be a screw valve or secured valve rocker operated for the purpose of releasing the gas from cartridge to balloon.

In one preferred embodiment an annular flange or shoulder 21 is provided at the lower edge of the collar 20 for mounting the balloon 10 to the connecting rope 18, said flange or shoulder 21 being prevented from slipping off by means of a ring or bracket 22 arranged above it. The ring 22 is provided with an eye 23 to which the securing rope 18 can be attached.

In a further embodiment the connecting rope 18 can also be attached to a single sleeve or bracket 15 which is provided with an eye 16 and arranged above the collar 20. Such an embodiment can be advantageous if it is desired to distribute any strain on the mouthpiece 13 and not to apply strain onto the outermost end of the mouthpiece 13.

In a further embodiment (not illustrated), a basket-shaped shackling can be provided around the balloon 10 which surrounds same in the form of a coarse-meshed net, and leaving sufficiently large areas of the balloon 10 free which are dyed with phosphorescent paint so that the balloon remains clearly visible. Alternatively, this net-shaped shackling may be dyed in the same manner. In such an embodiment it is appropriate to attach the connecting rope 18 to the lower, and if necessary, reinforced edge, the additional attachment of connecting rope to the mouthpiece 13 also being possible.

In order to facilitate location of the marker device even in poor atmospheric and visibility conditions, e.g. at night or in fog or haze, the balloon 10 is provided on its outer side with metal strips 27 arranged thereon in the form of a net of lattice, as indicated in Fig. 1. It is a property of such metal strips 27 to reflect radar beams, thus permitting location of the place in which the object or person carrying the marker device is situated.

In order not to rely solely on the chance of being found by other persons in cases of distress at sea, for example, the marker device may be provided with an additional means such as a transmission installation 11 emitting electromagnetic waves and/or a lamp 19 both of which are mounted on the upper part of the balloon 10 and which transmit optical, acoustic and/or radio signals. For such purposes an integrated switching network may be used which is cast in plastic and accordingly independent of weather conditions and which has the advantage of low weight. The supply of electricity to such installations may be by

electric leads running along the outside of the balloon 10 and connected to batteries. Such batteries may be arranged on the balloon 10 itself. In other embodiments, particularly

where the lifting capacity of the balloon is not considerable or should not be heavily strained, the leads may also extend through the connecting rope 18 and be connected to an appropriate battery near the holder 17. For this purpose dry cells are suitable in certain circumstances; in others, particularly at sea, it is more appropriate to use batteries which only become active upon entry of water. Such batteries can be mounted, for example, on a buoy which may be combined with the marker device.

In order to facilitate use of the marker device for all possible purposes, it is advisable to stow it in a packing which permits ready access, e.g. in a saddlebag or in a container, in which case care must be taken that the materials are sufficiently flexible to allow the marker device to be folded for packing. In this case the arrangement can be selected such that the container consists of two separable halves from which one end of the connecting rope with the safety holder protrudes. If for example a drag anchor with ballast is attached to the latter and if the marker device stowed in the container is thrown into the water, the trigger is automatically released by infiltrating water so that the inflating balloon opens the covering of the container, thus marking the position where the marker device has been thrown out.

CLAIMS

1. A marker device for position indication comprising securing means for releasable attachment to an anchor, a float, a fixed anchorage or other suitable object whereby the device is held in position, means for indicating the position of the device comprising an inflatable balloon locatable optically, acoustically or by radar beams and inflating means adapted for releasable connection to said balloon, the arrangement including a connecting rope which connects said balloon to said securing means.

2. A marker device according to claim 1, wherein the securing means is in the form of a safety holder and consists of a spring hook or shackle.

3. A marker device according to claim 1 or 2, wherein the balloon consists of a rubberized artificial-fibre cloth which is dyed with a phosphorescent paint.

4. A marker device according to any one of claims 1 to 3, wherein the balloon is provided with metal strips which reflect radar beams.

5. A marker device according to any one of claims 1 to 4, wherein the balloon is attached to the connecting rope by means of a basket-shaped shackling consisting of wire

or ropes and on which radar beam-reflecting metal strips are arranged.

6. A marker device according to any one of claims 1 to 5, wherein the balloon is provided with a transmission means emitting electromagnetic waves for transmitting optical, acoustic and radar signals or radar signals alone, said transmission means being connected through an electric lead to a battery.
7. A marker device according to claim 6 wherein the battery is operated upon entry of water therein.
8. A marker device according to any one of claims 1 to 7, wherein the inflating means for inflating the balloon comprises a gas cartridge which can be engaged therewith, said cartridge being filled with a gas lighter than air and including an activating device which can be operated by infiltrating water.
9. A marker device for position indication substantially as herein described with reference to and as illustrated in the accompanying drawings.